



ENVIRONMENTAL AWARENESS

AIR CONDITIONING AND THE ENVIRONMENT

Air conditioning systems provide a significant level of indoor comfort, making possible optimum working and living conditions in the most extreme climates.

In recent years, motivated by a global awareness of the need to reduce the burdens on the environment, some manufacturers including Daikin have invested enormous efforts in limiting the negative effects associated with the production and the operation of air conditioners.

Hence, models with energy saving features and improved eco-production techniques have seen the light of day, making a significant contribution to limiting the impact on the environment.



CONCLUSION

- > Close temperature control contributes to the quality of the wine
- > Daikin chillers will meet all the wine maker's temperature control requirements
- > A close relationship between wine maker, specialist installer and chiller manufacturer underpins the production of high quality wines.



Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.



Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. participates in the Eurovent Certification Programme for Air Conditioners (AC), Liquid Chilling Packages (LCP) and Fan Coil Units (FCU); the certified data of certified models are listed in the Eurovent Directory. Certification is valid for air cooled models <500kW and water cooled models <1500kW.

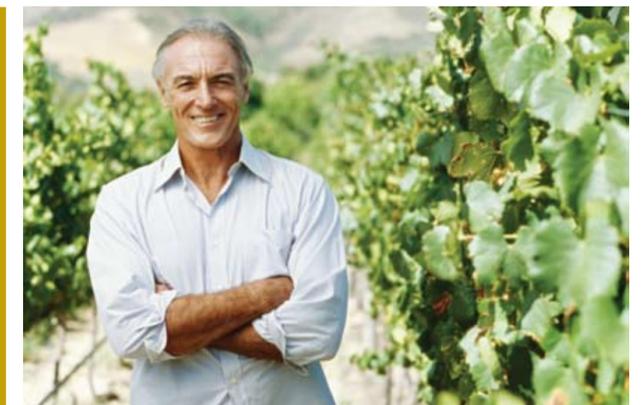
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TOTAL CHILLER SOLUTIONS FOR
WINERIES

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I. TOTAL CHILLER SOLUTIONS FOR WINERIES



Winemaking, generally accredited first to the Ancient Greeks, is now thought to have originated in Georgia and Iran between 6000 and 5000 BC. Probably for some time since then and definitely from the 18th century onwards, wine makers have been aware of the important role played by temperature control in the wine making process.

Until a couple of decades ago, wine makers relied solely upon 'nature' to supply the ideal conditions needed during wine production.

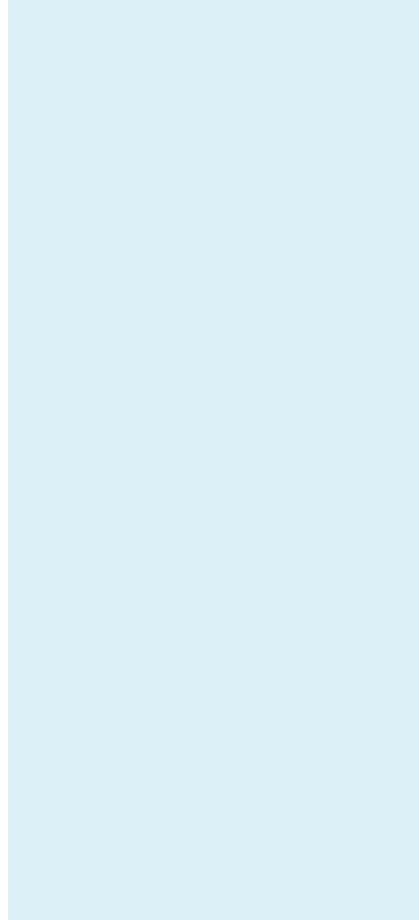
Today however, it is both feasible and economically viable to produce thermal conditions necessary for quality wine making that can seldom be supplied by nature.

Close temperature control has a major influence on all stages of wine production. It is vital during grape storage after harvesting, during alcoholic and malolactic fermentation, tartaric stabilisation and purification and clarification. It is even a factor during wine ageing, conservation, tasting and consumption.

Incorrect temperatures during cooling and heating can both inhibit and accelerate the process with dire results.

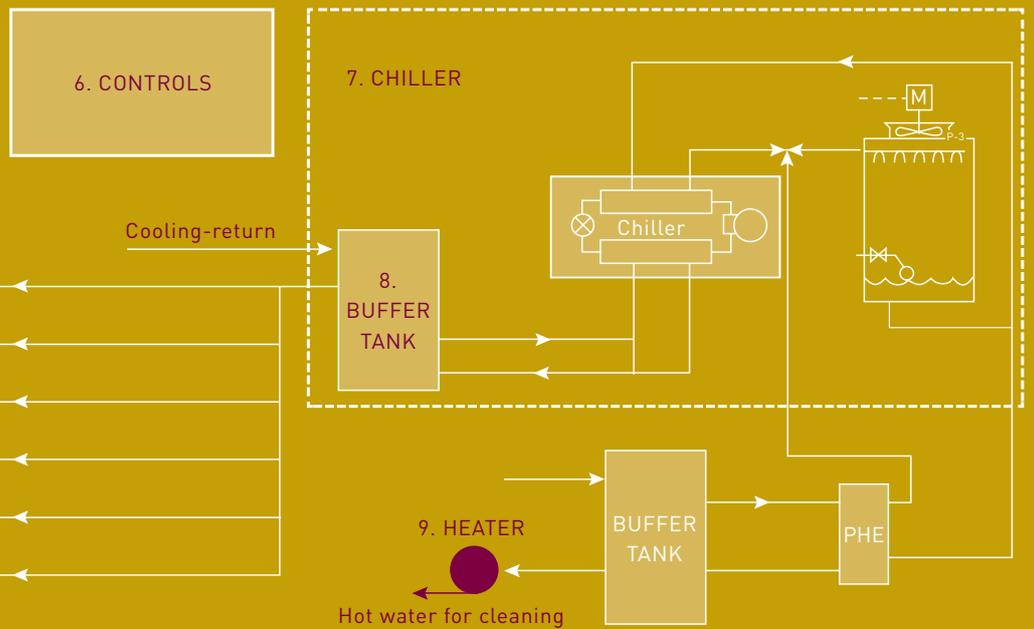


DAIKIN MANUFACTURES A WIDE RANGE OF WATER CHILLERS DESIGNED TO MEET THE WINE MAKER'S VARIOUS PROCESS AND COMFORT COOLING REQUIREMENTS.



II. PRINCIPLE

- 1. COLD ROOM ←
- 2. FERMENTATION ←
- 3. BARREL CELLAR ←
- 4. TARTRATE CELLAR ←
- 5. BOTTLE CELLAR ←
- 10. COMFORT COOLING ←



→ 1. COLD ROOM

The grapes are stored temporarily in the cold room at below 5°C in order to avoid spontaneous fermentation.

Cooling the fruit before pressing also slows down oxidation, which is an enzymatic controlled reaction and therefore temperature sensitive.

→ 2. ALCOHOLIC FERMENTATION

Prior to alcoholic fermentation, the must is often cooled in the fermentation tank to enhance cold maceration.

During yeast fermentation, glucose within the must is broken down into ethanol. This is best achieved if the temperature is maintained at 16 to 20°C for white wines and 24 to 32°C for red wines.

Daikin water chillers are able to supply the precise temperature to all types of fermentation tanks, including jacketed, belt and curtain models.

→ 3. MALOLACTIC FERMENTATION

This occurs during the 'silent' fermentation process and transforms the tart, apple tasting malic acid into softer tasting milky, lactic acid, thereby reducing the acidity of mainly red and occasionally white, wines. Favourable development of the lactic bacteria requires cooling or heating at temperatures between 20 and 22°C.





→ 4. TARTRIC STABILISATION

To avoid the formation of tartrate crystals precipitating within the wine bottle, the wine must be stabilised before being bottled.

Tartric stabilisation, carried out when the wine is chilled to below 0°C, enables the crystals to be separated easily from the clarified wine.

→ 5. BOTTLING AND STORAGE ROOM

Wine conservation is also dependent on close temperature and humidity control. Temperatures below 8°C or above 22°C can give rise to chemical reactions, which affect the quality of the wine.

During the conservation period, it is very important that the temperature should remain constant (and not fluctuate) within the optimum temperature range of 12 to 18°C. Heating is often required during conservation.

→ 6. CONTROLS

Daikin water chillers guarantee optimum temperature control throughout the various wine making processes. They can also be integrated in an overall building management system, which controls the total winery's operations.



→ 7. WATER CHILLERS

There are several types of water chiller available that provide optimum temperature and humidity control.

A particularly energy efficient solution is achieved by combining water-cooled water chillers with a cooling tower or dry cooler.

Air-cooled water chillers are very compact and can be supplied complete with buffer tanks, water pumps and heat recovery options. Heat pump models can supply either cooling or heating according to requirements.

→ 8. BUFFER TANK

The buffer tank ensures system operational stability in both full and partial load conditions and supplies water to the various cooling and heating processes. Its size is dependent upon the temperature control requirements of these processes.

→ 9. HEATING

Heating is necessary in many wine making processes as well as throughout the winery as a whole. It is for example, required to maintain the temperature needed to initiate fermentation and also to provide hot water for cleaning and pasteurisation etc. Heat pumps and heat recovery can reduce the winery's heating costs significantly.

→ 10. COMFORT COOLING AND HEATING

A heat pump chiller in combination with fan coil and air handling units can also be used to good effect to cool or heat tasting rooms, offices, laboratories and any other facilities around the winery.



III. DAIKIN HELPS PROVIDE THE IDEAL CONDITIONS FOR WINE PRODUCTION



Your local Daikin partner is able to offer support to both the wine maker and his consultant. Daikin can supply numerous support 'tools' such as computer software and technical literature to enable the optimum selection of the equipment required. Furthermore, comprehensive training programs are available for the benefit of installation and maintenance operatives.

IV. SUPPORT

YOUR LOCAL DAIKIN PARTNER IS ABLE TO AFTER SUPPORT TOWARDS THE UNITS WITH:

- Commissioning of the unit
- Technical assistance (training)
- Warranty - spare parts



EWAQ130-150DAYN



DAIKIN WINERY REFERENCES

FRANCE
ITALY
PORTUGAL
GREECE
SPAIN
GERMANY
NEW ZEALAND
SOUTH AFRICA
AND OTHERS...

CHÂTEAU CARBONIEUX, BORDEAUX, FRANCE

